



Have you ever looked closely at the water in a lake or stream? What about water from a spring? Was it clean? Would you drink it? Do you think it would make you sick if you did?

The water that we find in a lake or stream is usually too dirty to drink without cleaning it first. Sometimes we can tell that water is dirty, because it looks muddy, or smells bad. But other times, although it may look and smell clean, it would make us sick if we drank it. To be safe, you should never drink water unless it has been treated properly.

Water for our towns and cities is cleaned in water treatment plants before it comes to our homes and schools. Water treatment plants use four basic steps to clean water: coagulation, sedimentation, filtration, and disinfection. These steps are described in detail below.

Coagulation

To coagulate something means to make it stick together in clumps. Our blood does this naturally when we get a cut. Blood clumps together to form a scab over a wound. In water treatment plants, chemicals are added to dirty water to make the very small particles coagulate or clump together. These larger clumps are much easier to remove from the water. The most common chemical used for coagulation is alum. You have probably come across alum before without even knowing it. Alum is what makes your mouth pucker when you eat a dill pickle.

Sedimentation

Sedimentation means settling to the bottom. In a fast-moving stream, soil and other materials are stirred up into the water, making it look cloudy. When a stream runs into a lake, the water slows down, letting the soil and other solid materials fall to the bottom of the lake. In a

water treatment plant, water is pumped into a large tank called a sedimentation tank. The sedimentation tank usually has several walls rising up from the bottom of the tank. These walls are short enough to let the water flow over their tops, but tall enough to slow the water down. The solid materials settle to the bottom of the tank just like in a big lake. The cleaner water at the top of the tank is then pumped out into a filter.

Filtration

The filters used to treat water in water treatment plants are usually made of sand, but they may also have gravel, coal, or activated charcoal. These filters remove the solid materials not taken out by the sedimentation process. The water is now crystal clear, and it would taste good to drink, but it could still make you sick.

Disinfection

Many times, water from streams or lakes contains harmful germs that can make us sick, but are too small for us to see or filter out. These germs are removed in the final treatment step called disinfection. During disinfection, a chemical like bleach is added to the water to kill the germs and make it safe to drink.

Water treatment makes all the difference with respect to our health. Before water treatment plants were common, many children died each year because of diarrhea and dehydration. Many others became ill. But because of water treatment plants, we no longer have to worry about getting sick from drinking dirty water.

